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## Preface

FESCA 2004, the *First International Workshop on Formal Foundations of Embedded Software and Component-based Software Architectures*, was held on April 3rd 2004 as a satellite event of ETAPS 2004 in Barcelona, Spain. The aim of this workshop was to bring together researchers from academia and industry interested in formal modelling approaches as well as associated analysis and reasoning techniques with practical benefits for embedded software and component-based software engineering.

Component-based software design has received considerable attention in industry and academia since object-oriented software development approaches became popular. Recent years have seen the emergence of formal and informal techniques and technologies for the specification and implementation of component-based software architectures. With the growing need for safety-critical embedded software, this trend has been amplified.

Formal methods have sometimes not kept up with the increasing complexity of software. For instance, a range of new middleware platforms have been developed in both enterprise and embedded systems industries. Engineers often use semi-formal notations such as UML 2.0 to model and organise components into architectures. FESCA aims to address the open question of how formal methods can be applied effectively to these new contexts.

For FESCA 2004, we had as invited speakers Manfred Broy, Technische Universität München, Germany, and Constance Heitmeyer, Naval Research Laboratory, USA. We have accepted a total of 9 papers (7 long papers and 2 short papers) covering a broad range of topics within FESCA. This ENTCS volume contains the two invited contributions and six long papers presented at the workshop. All papers were reviewed by the program committee consisting of

- Angelo Corsaro (University of California at Irvine, USA)
- Frederic Doucet (University of California at Irvine, USA)

- Paul Le Guernic (IRISA/INRIA, France)
- Rajesh K. Gupta (University of California, San Diego, USA)
- Juliana Küster-Filipe (University of Edinburgh, UK)
- Chris Ling (Monash University, Australia)
- Seng Loke (Monash University, Australia)
- Iman H. Poernomo (Monash University, Australia)
- Ralf H. Reussner (University of Oldenburg, Germany)
- Sandeep K. Shukla (Virginia Tech, USA)
- Jean-Pierre Talpin (IRISA/INRIA, France)
- Alexandre Zamulin (A.P.Ershov Institute of Informatics Systems, Russia)

Additionally, a report on FESCA 2004 has appeared in the EASST newsletter number 2004-8 in June 2004 and can be found at <http://www.easst.org>.

Finally, we would like to thank the invited speakers and authors of the papers for their contribution to the meeting. Further, we are grateful to Mike Mislove for his help in editing this volume and to Jordi Cortadella for the work on the local organisation at ETAPS 2004 in Barcelona.

*Juliana Küster-Filipe  
Iman Poernomo  
Ralf Reussner  
Sandeep Shukla  
15 September 2004*